Support Document
(October 17, 2000)

For the Air Operating Permit Issued to

Vanalco, Inc.
5701 NW Lower River Road
P.O. Box 9805
Vancouver, WA 98660

by

State of Washington
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December 10, 2001

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Introduction

This Operating Permit Support Document fulfills the operating permit rule "Statement of Basis" requirement and explains particular portions of the air operating permit for the Vanalco, Inc. primary aluminum smelter, located in Vancouver, WA.

This document is not part of the operating permit for Vanalco, Inc. Nothing in this document is enforceable against the permittee, unless otherwise made enforceable by permit or order.

Statement of Basis

When the Department of Ecology issues a draft operating permit, it is required to provide a statement that sets forth the legal and factual basis for the draft permit conditions, including references to the applicable statutory or regulatory provisions. [WAC 173-401-700(8).] This Support Document was issued along with the public notice draft Air Operating Permit for Vanalco on July 10, 2000. Following public comment, a Summary of Comments and Responses was prepared which supplements this Support Document in relation to the proposed/final permit.

Facility and Process Descriptions

Under full production, Vanalco produces 127,750 tons per year of primary aluminum which is sold as either aluminum billet, pig or sow. Due to high cost electrical power, Vanalco recently curtailed production to about one-fifth of this level. The company has indicated the earliest timeframe for resuming full production would be October, 2000.

The aluminum is produced through the electrolytic decomposition of alumina into two chemical components which are metallic aluminum and gaseous oxygen (Hall-Heroult process). In order to do this, alumina must be brought into a liquid form allowing direct current to pass through it. The process uses a fluorinated compound of sodium and aluminum, cryolite, which melts around 1000^{o}C, and which has the capability in the molten state to hold up to about 8% alumina in solution. Molten aluminum, which is released during the electrolysis, has a slightly higher specific gravity than molten cryolite at the cell operating temperature, and therefore will settle to the bottom of the cell. The electrolytic cell consists of a steel shell lined with insulating materials and having an electrically conductive bottom made of carbon connected to the negative polarity of the power source. Hanging above and dipping into the cryolite-alumina melt are carbon anodes connected to the positive polarity. When the electric current flows from the anode to the cathode, alumina is split into metallic aluminum, which spreads over the cell bottom, and oxygen, which evolves at the inner surface of the carbon anode, burning it and thereby releasing a blend of gasses, primarily carbon dioxide and carbon monoxide, and some sulfur dioxide, due to sulfur content of the anode material. Hydrogen fluoride also evolves from the bath due to the operating temperatures of the cells and in the presence of moisture in the alumina.

There are four basic cell designs, two are "prebake" and two are "Soderberg". The Vanalco, Inc. smelter operates center-worked prebake (CWPB) cells. Prebake cells utilize carbon anodes,

made from petroleum coke and coal tar pitch, which have been preformed into blocks, baked, and secured onto copper rods prior to being introduced into a cell. Pressing, baking and rodding take place on-site in the green carbon, baked carbon, and anode rodding processes respectively. In the case of Soderberg cells, the carbon anode paste is not pressed into pre-shaped blocks and baked in a separate furnace, but is placed into a steel casing hanging above the cell. The carbon paste is baked in the cell itself by virtue of the heat coming out of the molten bath, while the studs hold the anode and bring the current into the cell. Soderberg cells have only one large anode, while prebake plants have several anodes, placed in two rows and electrically connected in parallel, with the ability to individually control the depth of immersion of each anode in the bath. In center-worked pots, the crust overlying the molten bath is broken and ore is fed by means of a puncher-feeder device located along the cell's centerline between the two rows of anodes. The individual cells are arranged in "potlines" which are rows of cells connected electrically in series. Each potline occupies two long "potrooms."

Vanalco has five potlines, numbered 1 through 5. At the time of permit issuance, line two is the only line in operation. The others were recently shut down due to high electric power cost.

Air pollution control systems employed at Vanalco include the following:

For potlines, a primary emission control system captures pot fumes. The system consists of hoods and movable shields around each pot, a system of ducts and fans which draw the fumes from each pot to a centralized treatment system. The treatment system consists of alumina dry scrubbers (referred to as A-398s) which use alumina to react with hydrogen fluoride in the fumes. The resulting aluminum fluoride is removed, along with other particulate matter, by a system of baghouses prior to venting the treated gasses to the atmosphere.

For anode bake ovens, an alumina dry scrubber system with fluidized bed alumina reactors and baghouses (A-446s) treats bake oven gasses in a fashion similar to the A-398 system described above. Bake oven gasses consist of combustion products from natural gas and from volatile matter driven off the baking anodes and burned in the ovens, particulate matter from the packing coke surrounding the baking anodes, and fluoride present in spent anodes that are crushed and returned to the anode mix.

For the green mill, a new dry coke scrubber system (Procedair) for collecting and treating organic vapors and particulates in the carbon plant was installed in anticipation of the MACT standards. In the green mill, petroleum coke and coal tar pitch are heated, mixed and pressed into anodes. Carbon particles and organic vapors escape these processes. The coke scrubber adsorbs volatile material onto calcined petroleum coke, and a baghouse captures the resulting particles.

Several ancillary processes in the plant are equipped with nuisance dust collectors with baghouses; and, an electrostatic precipitator removes particulate matter generated from carbon-grinding at the Cottrell, located in the carbon plant.

In addition to physical control systems, operating procedures and practices and maintenance are important factors in emissions, especially in the potrooms, where pollutants not captured by the primary emission system are released without treatment through roof vents.

Comments on Specific Permit Conditions

A) Aluminum Plant Emission Standards:

All aluminum plants are required to meet the emission standards of WAC 173-415-030 and -060. WAC 173-415-030 states that "specific emission standards listed in this chapter will take precedence over the general emission standards of chapter 173-400 WAC. The requirements of conditions 1.1 (WAC 173-415-030(3), 1.3 (WAC 173-415-030(4), 1.8 (WAC 173-415-030(5)(a) in this permit are at least as stringent as and take precedence over the requirements for visible emissions (WAC 173-400-040(1)), fugitive emissions (WAC 173-400-040(3)(a)), and SO_2 (WAC 173-400 -040(5)(b)) respectively.

B) Plant-wide Operation and Maintenance:

WAC 173-415-030(6) requires aluminum plants to maintain the facility and operate and maintain air pollution control equipment consistent with good air pollution control practice.

Vanalco has a systematic operation and maintenance program in place that has consistently produced good results, as evidenced by low emissions and satisfactory findings during regulatory inspections. Ecology has incorporated Vanalco's O&M program into the permit. It consists of: daily inspections of dust collectors by operators in each work area, with an inspection log maintained; monthly preventive maintenance on electrical and mechanical systems, with records kept; problems found during inspections are corrected by operators as soon as practicable; if the operator cannot correct the problem, a work order is made for repair within the same day the problem is found, and maintenance personnel correct the problem as soon as practicable; Ecology is notified if the problem cannot be corrected within 24 hours of first observation; records are maintained on work orders and corrective action; daily visible emission checks and differential pressure readings are taken on each baghouse unit; dust collectors are operated at all times when the emission units they serve are operating; on all processes that use them, hoods, shields, shrouds and covers must be in place and/or securely closed; street sweepers are used regurly indoors and outdoors to limit dust accumulation; and, materials handling operations are conducted indoors wherever possible.

Information gathered through this O&M program and reported and/or available to inspectors provides information to indicate compliance or noncompliance. Historical testing and inspections indicate that emission units that are properly operated and maintained comply with the applicable standards. Conversely, detection of visible emissions during daily checks, abnormal baghouse pressure readings or ESP primary voltage readings, inoperative or improperly used equipment, and other notations of problems found but not corrected in a timely manner are indications of likely noncompliance. EPA's Credible Evidence Rule, FR 8314, February 24, 1997, supports the use of information gathered by means including, but not limited to, reference method

testing in enforcement. Thus, data gathered and recorded through Vanalco's routine O&M checks may be used in enforcing opacity, particulate, and other standards and O&M requirements, and they have been included in the permit as appropriate periodic monitoring.

Potroom Operation & Maintenance and Collection & Removal Efficiency are described in I) below.

C) Periodic Monitoring

State and federal rules require that permits contain periodic monitoring of emissions. Where the underlying applicable requirement (emission standard or order) requires periodic monitoring, these monitoring requirements must be included in the permit [WAC 173-401-615(1)(a)]. Where it does not, the permit must include "periodic monitoring sufficient to yield reliable data from the relevant time period that are representative of the source's compliance with the permit… ."

On September 15, 1998, EPA published a memorandum "Periodic Monitoring Guidance for Title V Operating Permits Programs." This guidance sets out a somewhat specific process for determining periodic monitoring requirements for permits. The guidance was subsequently appealed in federal court. An April 14, 2000 decision by the U.S. Court of Appeals for the District of Columbia Circuit set aside the EPA guidance, and ordered that, "State permitting authorities therefore may not, on the basis of EPA's Guidance or 40 CFR s 70.6(a)(3)(i)(B), require in permits that the regulated source conduct more frequent monitoring of its emissions than that provided in the applicable State or federal standard, unless that standard requires no periodic testing, specifies no frequency, or requires only a one-time test."

Periodic monitoring requirements may be satisfied through reference method testing, continuous emission monitors, monitoring of operating parameters, inspection, record keeping, or combinations of these methods. Where a reference method for an applicable requirement exists (e.g. EPA Method 9 for opacity), the reference method is included in the permit as the definitive method for determining compliance. Methods other than reference method testing may be used to produce data representative of compliance. Where such data indicates noncompliance, it may be presumed to provide credible evidence of the violation for enforcement purposes [see discussion on credible evidence in B), Plant-wide Operation and Maintenance].

The permit for Vanalco incorporates all periodic monitoring requirements specified in the underlying applicable requirements. In addition, where Vanalco conducts periodic monitoring as a routine part of their O&M programs [see B), Plant-wide Operation and Maintenance and I), Potroom Operation & Maintenance and Collection & Removal Efficiency] the permit incorporates that periodic monitoring. Where no periodic monitoring is required by the applicable requirement and there is no monitoring program in place, monitoring requirements have been proposed to satisfy the state and federal rules cited above.

D) Opacity Permit Conditions:

Five of Vanalco's significant emission units produce visible emissions at times during normal operations: The A-446 baghouse units serving the anode baking furnaces; baking furnace roof vents; potroom roof vents; the Cotrell electrostatic precipitator (ESP), serving the crushing circuits in the green mill; and the carbon storage Building 52 vents. Emission units with control devices are routinely within opacity limits. A sliding scale for opacity readings will be required for units with control devices (A-446s and Cotrell ESP). Weekly readings will be required, when operating, for 10 consecutive weeks. If no exceedances are observed, the frequency will be reduced to monthly readings. If any exceedance is observed, the frequency increases again to weekly.

For emission units without control devices that produce visible emissions (baking furnace roof vents, potroom roof vents, Building 52 vents) routine opacity readings using the approved method (EPA Method 9) are impractical due to the configuration of the vents, the absense of accessible locations with appropriate viewing angle, and/or effects of weather or water vapor in the plume. It is Ecology's judgement that opacity levels from these sources is minimal and within the 20% opacity standard. Furthermore, operating practices within these sources are covered by operation and maintenance conditions in the permit as described above, and Vanalco, Inc. has historically operated these sources consistent with good air pollution control practice. Therefore, except for bake oven roof vents, discussed under "E) Compliance with Particulate Matter Requirements, Bake Ovens" below, no routine opacity monitoring is proposed, although Ecology would retain the ability to require opactity readings upon request. Problems with operating practices are enforceable through the general requirement to operate and maintain facilities in a manner consistent with good air pollution control practice.

For smaller dust collector systems with baghouses that do not produce visible emissions during routine operations, the facility-wide O&M conditions described above will apply as well as opacity readings required upon request by Ecology. These units would be insignificant units except for construction or modification that required a Notice of Construction. See D) below for a list and a discussion of periodic monitoring for these units.

E) Compliance with Particulate Matter Requirements:

Potline operations are covered by a particulate matter standard of 15 lbs. per ton of aluminum produced, found in WAC 173-415-030(2). Compliance is determined by adding particulate levels determined through source tests conducted on the primary (A-398) systems to those determined through Method 14 testing at the Room 10 roof monitor. Room 10 has been determined to be representative of all potrooms at the facility. Compliance with the facility-wide O&M requirements (see B) above for description of O&M requirements and how they address periodic monitoring), and the Potroom O&M Index (see I) below), helps to assure continuous compliance with the 15 lb/ton standard and to develop data to indicate compliance or noncompliance.

Dry coke scrubber particulate emissions are limited to 2.57 lbs/hr. by an Ecology order approving construction of this unit. Periodic monitoring consists of annual source tests and compliance with the O&M requirements described in B) above.

Bake oven gasses collected by the A-446 system are subject to the 0.1 gr/dscf standard contained in WAC 173-400-050 (1). Periodic monitoring consists of source tests conducted three times per year and compliance with the O&M condition described in B) above.

Periodic monitoring requirements for the carbon grinding electrostatic precipitator (ESP) include annual source testing and daily monitoring of the ESP primary voltage, in addition to compliance with the O&M requirements described in B) above. A one-time source test indicated a particulate level of 0.075 grains per dry standards cubic foot, within the 0.1 standard. The company has since made improvements to the unit to further reduce particulate emissions.

Periodic monitoring requirements for several small baghouse units include the O&M requirements described above. Monitoring of larger baghouse units, including those subject to MACT standards, include these checks plus periodic source testing. Routine source testing of non-MACT baghouse units (see list at end) is not proposed.

EPA periodic monitoring guidance was considered, but not regarded as regulatory, in establishing periodic monitoring requirements (see C, Periodic Monitoring, above) It lists the following factors to be considered in arriving at appropriate periodic monitoring methodology. With each factor, commentary is provided in relation to Vanalco's small baghouse units.

1. Likelihood of violating the applicable requirement (i.e. margin of compliance): One-time source tests at Vanalco on four of the 6 units in question produced PM levels well below .005 gr/dscf, the most stringent limit on any of the units. Fifteen tests on a fifth unit (Bldg. 36A scrap ore screening baghouse) were all at or below .004 (the limit is .01). The only unit with no source-test data is the Wheelabrator shot blast baghouse. The PM limit for this unit is .01. Vanalco's O&M procedure, described in B) above, is aimed at assuring that problems are prevented and detected/corrected so as to maintain the units in good order. Baghouses, if properly operated & maintained, should consistently meet low grainloadings. Limits are generally based on manufacturers performance specifications and should be conservative. Likelihood of violation is quite small. Likelihood of detection of any violations through source testing is extremely small at any reasonable source test frequency. Vanalco has a good compliance record and good procedures for detecting and correcting any problems.

   Further, EPA's Credible Evidence Rule does not "preclude(s) the use (for compliance certification or enforcement), including exclusive use, of any credible evidence or information, relevant to whether a source would have been in compliance with

applicable requirements if the appropriate performance or compliance test or procedure had been performed… ."

2. Whether add-on controls are necessary for the unit to meet the emission limit: Insufficient information is available to determine this. With frequent inspections, visual checks, and inspection of equipment, there is far greater likelihood than with infrequent source testing that problems which could cause the units to operate without controls would be rapidly detected and corrected.

3. Variability of emissions from the unit over time: Source test data on the bldg. 36A baghouse indicates little variation. In 14 of the 15 tests, PM levels varied from .00001 gr. to .0012. Even including the 15th test at .004 gr., standard deviation is .0009 and the average + 1.96 standard deviation is .003, well within the .01 gr. limit. Source tests at the other four tested units varied from .00036 gr. to .0024, all less than half of the lowest limit of .005.

4. The type of monitoring, process, maintenance, or control equipment data already available for the emission unit: Vanalco routinely (daily/weekly) inspects the units, reads pressure drop, and reports any anomalies for correction. In addition, they will be required to make observations for visible emissions (VE), and any observed VE would require investigation/ correction. As mentioned earlier, limited source testing data is available for most of the units in question.

5. Technical and economic considerations associated with the range of possible monitoring methods: The following factors weigh against source testing;
    - Routine source testing of these units would cost an estimated total of $30,000-$35,000 over the 5-year permit and the cost would not be justified.
    - All of these units would be insignificant emission units were it not for the fact that NOC orders have been issued for them. As IEUs, no monitoring at all would be required.
    - Total emissions from all of these units at Vanalco are ~1 TPY, compared with ~ 1000 TPY total, or less than 0.1% of total plantsite PM (based on the application year).
    - Source testing would produce very few compliance data points; inspection/correction and parametric monitoring assure much closer attention and yield much more frequent and useful data.
    - Once the technology is installed, the primary regulatory concern is to assure good O&M. This is far better addressed by more frequent and adequate inspection/correction than by occasional source testing.
    - Even without routine source testing, Ecology would still have discretion to require source testing on a case-by-case basis.
    - The permittee has to certify compliance. Vanalco would have to certify in a technically defensible manner.

6. The kind of monitoring found on similar emission units: Inquiries with other Ecology permit staff and other permitting agencies in the Northwest, including Oregon and

SWAPCA indicate that source testing generally is not required for units of similar type and size.

Emission for these units are shown below.

Unit	PM TPY
E-56 Bake #3 packing material baghouse	0.16
E-20 Wheelabrator shot blast	0.094
E-38 Grit Blaster baghouse	0.09
E-9 Alumina D-2 belt baghouse	0.49
E-16 Bldg 36A scrap ore screening	0.095
E-17 Bath crushing baghouse	0.09
Non-MACT baghouse total	1.028 or less than 0.1% of total
Facility total	1081

Particulate standards also apply to some sources that would be difficult or impossible to source test. A discussion of each follows.

Bake Ovens: Apart from the A-446 and Bake #3 packing material baghouse, discussed above, bake oven operations create particulate emissions that escape through the roof vents. Although operating procedures minimize dust to the extent practical, the operations are somewhat dusty by nature. No historical particulate or opacity monitoring has been conducted on the roof vents. Vanalco will develop and submit a test plan to establish appropriate monitoring. The test plan will include methods and a frequency for testing PM and VE, and for recording operational practices occurring at the time of testing to relate practices to emissions. Due to the shutdown of four potlines in June, 2000, the requirement for test plan submittal will be deferred until 180 days after full operation resumes. In the interim and as a part of ongoing periodic monitoring, the facility-wide O&M requirement described in condition B) will develop data representative of compliance. Due to the greatly curtailed bake oven operations (furnishing anodes for one potline instead of five), emissions will be much lower than under full production. The testing schedule may be reduced accordingly. Vanalco is currently gathering emission and operating data for this reduced production level.

Carbon Plant Storage Building #52: Dusty material handling operations are conducted within the relatively enclosed space of this building. The building has vents and doors but no forced ventilation system. Air flow through these vents depends on wind and convection. As a result, air flow cannot be interpreted as "stack velocity" in reference method source testing. Although technically not a "fugitive" source when emitted through vents, the activities are typical of fugitive sources which are required to be controlled through Reasonably Available Control Technology by WAC 173-415-030(4).

F) SO_2 Permit Conditions:

Chapter 173-415 WAC limits sulfur dioxide emissions from aluminum smelters to 60 lb per ton of aluminum produced on a monthly maximum basis, and also limits emissions to no more than 1,000 ppm SO_2. Smelters presently control SO_2 emissions by limiting sulfur content in raw materials, particularly petroleum coke. The permit requires Vanalco to determine SO_2 emissions by mass balance calculation, or alternatively by source testing. The equation used for mass balance calculation used to determine compliance with the 60 lb SO_2/ton Al limit is as follows:

$$SO_2/\text{ton Al} = (\Sigma C \times S_C + \Sigma P \times S_P + \Sigma O \times S_O) \times 40 / Al$$

where C, P, and O are the coke, pitch, and fuel oil usage during the month from each shipment, in tons; S_C, S_P, and S_O are the sulfur concentration of each shipment of coke, pitch or fuel oil respectively, expressed as a percentage; and Al is the aluminum production for the month. The factor of 40 derives from converting tons of raw materials to pounds (2,000 lbs/ton), converting the percentage of sulfur in raw materials to a decimal fraction (100), and converting the weight of sulfur to the weight of SO_2 (1 lb sulfur combines to make 2 lbs SO_2).

Using a worse-than-worst-case analysis, Ecology determined that Vanalco would be incapable of violating the 1,000 ppm SO_2 standard, with the possible exception of an extreme upset condition. Therefore, no routine monitoring for this standard is proposed.

G) Furnace #6 CO and NOx Emissions

Vanalco replaced Holding Furnace #6 in their cast house in July 1996. A Notice of Construction was issued, containing limits on CO and Nox as well as opacity and particulate. Vanalco conducted source tests on the new furnace in January, 1997. The average CO level was 2.0 ppmv compared with a limit of 100, and Nox was 6.2ppmv compared with a limit of 83. Ecology proposes to use emission factors from these tests to require annual calculation of emissions. The emission factors are: for CO, 0.2 lbs./million BTU; for Nox, 0.1 lbs./million BTU.

H) Ambient and Forage Fluoride Standards and Monitoring

Order No. DE 98AQ-I065 describes prior monitoring and modeling of ambient and forage fluoride near the plant. Based on the findings stated in the order, ambient fluoride standards are consistently met and no monitoring is required. Based on a possibility that forage standards could be exceeded, an annual survey of potential forage sites is required, with sampling from sites within one mile of the plant with a potential for livestock to consume vegetation.

I) Potroom Operation & Maintenance and Collection & Removal Efficiency

WAC 173-415-030(1)(b) requires potline primary emission control systems to be "designed so that the control of fluoride emissions will be equivalent to a total fluoride collection efficiency of…ninety-five percent for center worked prebake pots. A primary emission control system with a design removal efficiency of at least ninety-five percent of the fluoride collected is required." Ecology interprets this rule to require, on an ongoing basis, at least 95% collection efficiency, and independently, at least 95% removal efficiency, and has proposed in a permit for another facility to require periodic testing of collection efficiency. The aluminum industry has commented that it interprets the requirement to have been a one-time requirement, applicable at the time control equipment was installed, and that it should apply as a *combined* requirement, i.e. that the total pot emissions collected and removed should be 95% of 95%, rather than *separate* requirements. This difference in interpretation has been the subject of rulemaking by Ecology to clarify and demonstrate the appropriateness of both the ongoing nature of the requirements, and their applicability as separate requirements for collection and removal. This rulemaking is currently on hold due to staffing and priority issues. Nonetheless, Ecology must incorporate existing, applicable requirements into the permit, and has done so in this permit in a manner consistent with Ecology's current interpretation of the rule. In doing so, Ecology acknowledges that these differing interpretations exist, and does not intend to create enforcement liability for past performance as a result of this permit requirement. At performance levels consistently achieved over the past three years, Vanalco's collection efficiency has been better than 95% at all times, and Ecology has determined that ongoing monitoring for collection efficiency is not necessary at these performance levels. Ecology believes the issue of whether collection efficiency is a one-time vs. ongoing requirement is moot at these performance levels, and by agreement with Vanalco, has established a level of secondary potroom emission rate of 2.24 lbs TF/ton of aluminum produced as a demonstration of good O&M. This rate is at a 99% confidence level based on the past three years' data, and equates to a collection efficiency of 95.39%.

WAC 173-415-030(6) requires owners and operators to operate and maintain facilities and equipment in a manner consistent with good air pollution control practice. Potroom practices and integrity of pot sheilds are the major factors determining collection efficiency. Further, once pot gasses are collected, the alumina dry scrubber systems are very effective in removing flouride and particulates. Vanalco and Ecology have agreed to secondary emissions monitoring as a sole monitoring requirement for potroom O&M, except for a period following startup of a potline, so long as a rate of 2.24 lbs TF/ton of aluminum produced or better is maintained. Due to Vanalco's good operating record and early compliance with MACT standards, Ecology accepts that their potroom O&M is generally good, and believes that more prescriptive O&M requirements are not necessary to assure good O&M at this facility. If 2.24 lbs/ton is exceeded, additional monitoring is required: first, through submittal of a report identifying the reason for increased emissions and a plan for reducing them; then through monitoring for collection efficiency. Because roof emissions are monitored using a Method 14 manifold only in Room 10 and by continuous emissions monitors (CEMs) in all potrooms, determination

of secondary emissions would be determined by correlation between Method 14 data and CEM data.

One possible operating scenario at Vanalco is that one or more potlines may be operated seasonally, i.e. only during periods of relatively low power cost. The O&M monitoring method described above does not contemplate routine shutting down and re-starting of potlines, since higher emissions are allowed following startup, which could become a much more frequent event. If this practice is adopted by Vanalco, periodic monitoring requirements for O&M may need to be revised.

J) Hazardous Air Pollutants and MACT

In October, 1997, USEPA promulgated National Emission Standards for Hazardous Air Pollutants (NESHAPS) representing Maximum Achievable Control Technology (MACT) for the primary aluminum industry. These rules are contained in the Code of Federal Regulations at 40CFR Part 63, Subchapter LL. Hazardous air pollutants (HAPs) for this industry include total fluoride (TF) and polycyclic organic matter, (POM). The MACT standards for primary aluminum were further subcategorized into major process areas producing emissions of either or both of these HAPs including potlines, paste plants, and bake ovens, and for potlines, still further subcataegorized by the type of reduction cell employed. Vanalco, Inc. is listed in the federal regulations as being within the center-worked prebake two (CWPB2) subcategory.

In prebake plants, including CWPB2 plants, potlines produce fluoride in both gaseous and particulate form. Total fluoride standards address both gaseous and particulate forms of fluoride. POMs are not of concern in prebake plant potline emissions because they are driven off from the anode material during the anode baking process. Thus, MACT standards for prebake potlines address only total fluoride. Paste production plants (or "green carbon" as it is known at Vanalco), on the other hand, produce POM emissions but fluoride emissions are not significant. Incoming coal tar pitch, used to manufacture green anodes, contains substantial quantities of volatile polycyclic hydrocarbons which escape during the melting, mixing and pressing processes within the carbon plant. MACT standards for paste plants require a specific technology for POM emission control; dry coke scrubbers. Although other technologies may be used if equivalency is demonstrated, Vanalco has already installed a dry coke scrubber. Numerical POM limits are not included in the standards. Anode bake ovens produce both fluoride and POM emissions. At Vanalco, these are collected and treated in an existing dry alumina scrubber system.

Vanalco, Inc. has taken a proactive approach to implementing primary aluminum MACT requirements, and was in compliance with MACT emission standards and requirements, including monitoring, by the October 7, 1999 deadline and is the only aluminum smelter in Washington that did not requested an extension to that compliance date.

Vanalco has complied with the following one-time primary aluminum MACT requirements; therefore they have not been included in the permit.

Requirement	CFR Reference	Date Complied With
Install equipment to capture and control paste plant POM emissions, route to dry coke scrubber	40CFR63.843(b) and .843(b)(2)	Notification of compliance status – 1/28/00
Install continuous parameter monitoring system for each emission control device. Determine operating limits.	40CFR63.848(f) and .847(h)	August 2, 1999, revised January 28, 2000, approved by EPA May 22, 2000
Demonstrate initial compliance.	40CFR63.847(a)	10/7/1999, reported on 1/28/00
Prepare and submit for approval a site-specific test plan.	40CFR63.847(b)	August 2, 1999, approved by EPA May 22, 2000
Conduct initial performance tests in accordance with 40CFR Part 63 general provisions, 63.847, and the approved test plan.	40CFR63.847(c) and (d)	January 28, 2000
Install monitoring devices to determine the daily weight of aluminum and green anode material produced.	40CFR848(j)	Reported on August 2, 1999
Submit recommended acuracy requirements	40CFR63.848(k)	June 14, 2000
Develop and implement startup, shutdown malfunction plan	40CFR63.850(c) and 40CFR 63.6(e)(3)	Ocstober 7, 1999
Notification of intent to conduct initial performance tests	40CFR 63.850(a)(5) and 63.7(b)(1)	August 2, 1999
Notification of initial compliance status and report results of initial performance tests.	40CFR 63.850(a)(6), .850(b) and 63.7(g)	January 28, 2000

In March, 2000, EPA promulgated MACT standards for the secondary aluminum industry. These standards apply to processes such as furnace operation, fluxing and dross cooling regardless of whether they are conducted at a separate secondary aluminum production facility or at a primary smelter. Ecology has not yet determined the applicability of this rule to Vanalco. This will be done at a later time, and the Air Operating Permit will be modified as necessary to incorporate secondary MACT. Facilities have three years from the effective date of March 23, 2000 to comply.

K) WAC 173-400-105, WAC 173-401-530(2)(c), and Insignificant Emission Units

Since monitoring, recordkeeping, and reporting has not specifically been required by Ecology for insignificant emission units per WAC 173-400-105(First Paragraph), there are no air operating permit monitoring, recordkeeping, and reporting requirements for the insignificant emission units required by the permit. In the event that such monitoring, recordkeeping, and reporting requirements are imposed pursuant to WAC 173-400-105, an IEU would no longer qualify for the exemption from operating permit testing, monitoring, reporting or recordkeeping contained in WAC 173-401-530(2)(c). Further, WAC 173-401-530(2)(c) states that permits shall not require testing, monitoring, reporting or recordkeeping for IEUs except where generally-applicable requirements of the SIP specifically impose such requirements. At the time of permit issuance, there are no such requirements applicable to IEUs.

L) Numbering Sequence of Emission Units:

Vanalco's emission units (including insignificant emission units and activities (IEUs) and those subject to only the generally applicable requirements) are numbered in sequence in the permit application. The facility-wide generally applicable requirements apply to the whole facility, including IEUs.. The permit does not include the IEUs in the respective process tables and does not require any testing, monitoring, reporting, recordkeeping, or compliance certification requirements for IEUs (see section K) . Since all emission units in the facility are subject to the generally applicable requirements, only the emission units with additional requirements were included in the process tables.

To avoid confusion about why there are missing numbers in the emission unit numbering sequence, the sequence all of the emission units are summarized below.

The permittee is required to include emission units defined as insignificant on the basis of size or production rate in accordance with WAC 173-401-533. Those emission units are identified in below.

PROCESS	EMISSION UNITS INCLUDED IN THE PERMIT (SUBJECT TO SPECIFIC REQUIREMENTS IN ADDITION TO GENERALLY APPLICABLE REQUIREMENTS)	EMISSION UNITS SUBJECT TO ONLY GENERALLY APPLICABLE REQUIREMENTS	IEUs
Green Carbon, Process #2	E-29 Carbon Grinding Electrostatic Precipitator Stack (Cottrell)	**E-48 Carbon Grinding Building #54 Roof Vents**	E-26 Butt Impactor Baghouse Stack
	E-50, 51, 52, 54 Carbon Cooling Belt #1,2,3 and 4 E-46 Carbon Plant Storage Building #52 Window Vents	**E-49 Carbon Mixer Building #54A Roof Vents**	
		E-53 Carbon Press and Transfer Building #56 Roof Vents	**E-47 Butt Crusher Building #53 Roof Vent**
	E-111 Dry Coke Scrubber	**E-112 Coke silo cyclone**	
Baked Carbon, Process #3	E-55 A-446 Bake Oven Fluidized Bed Scrubber/Baghouse Stacks		**E-22 Anode Cleaning Machine #1 Baghouse Stack**
	E-56 Carbon Bake Oven Lines Roof Monitors and Roof Fans, Buildings 58, 60 and 64	E-56 Carbon Storage, Shipping and Cleaning Area, Buildings 59, 64A	**E-23 Anode Cleaning Machine #2 Baghouse Stack**
	E-56. Bake #3 packing material baghouse		**E-24 Packing Material Hopper Baghouse Stack**
Anode Rodding, Process #4	E-20 Rod Blast Baghouse Stack	E-59 Carbon Rodding Building #32 Roof Monitor	E-18 Butt Press Baghouse Stack
			E-19 Lectromelt Furnaces Baghouse Stack
			E-57 Lectromelt Roof Fans
			E-58 Cast Iron Crucible Hood Vent
Potroom Operations, Process #5	E-38 Grit Blaster Baghouse Stack (Building #68)		
	E-60 A-398 Potline Fluidized Bed Scrubber/Baghouse Stacks		
	E-61 Potroom Roof Monitors		
Metal Products, Process #6	E-62 Holding Furnace Stack #1		
	E-63 Holding Furnace Stack #2		

I) Numbering Sequence of Emission Units (Continued):

PROCESS	EMISSION UNITS INCLUDED IN THE PERMIT (SUBJECT TO SPECIFIC REQUIREMENTS IN ADDITION TO GENERALLY APPLICABLE REQUIREMENTS)	EMISSION UNITS SUBJECT TO ONLY GENERALLY APPLICABLE REQUIREMENTS	IEUs
Metal Products (continued)	E-64 Holding Furnace Stack #3	E-68 Holding Furnace #1 Door Hood Vent	
	E-65 Holding Furnace Stack #4	E-69 Holding Furnace #2 Door Hood Vent	
	E-66 Holding Furnace Stack #5	E-70 Direct Chill Casting Pit (D-Unit) Stack	E-71 900-Pound Sow Caster Cooling Vent
	E-67 Holding Furnace Stack #6	E-72 Homogenizing Furnace Stack	E-73 Homogenizing Furnace Cooling Chamber Fan Vents
		E-76 Ingot Plant Hot Side Roof Vents (East)	E-74 Aluminum Saw Stack
		E-77 Ingot Plant Hot Side Roof Vents (West)	E-75 Ingot Plant Cold Side Roof Vents
			E-110 Direct Chill Casting Pit (C-Unit) Stack
Ancillary Operations, Process #7	E-9 Alumina D-2 Belt Baghouse Stack	E-95 Potlining Roof Fans, Building #32	E-1 Alumina Ship Unloading Baghouse Stack
	E-16 Building #36A Baghouse Stack		E-2 Alumina Pier AB Transfer Point Baghouse Stack
	E-17 Bath Crusher (Autogenous Mill) Baghouse Stack		E-3 Alumina BC Transfer Point Baghouse Stack
	E-86 Boiler Building #66 West Stack		E-4 Alumina D Belt Baghouse Stack
	E-87 Boilerhouse Bilding #66 Central Stack		E-5 Alumina A House Baghouse Stack
			E-6 Alumina B House And Tank 161-ME Baghouse Stack
			E-7 Building #36 Baghouse Stack
			E-8 Alumina Tank 141a Baghouse Stack
			E-910 Alumina Tank 16-MW Baghouse Stack
			E-11 Alumina Tank 161-RS Baghouse Stack
			E-12 Alumina Tank 161-RN Baghouse Stack
			E-13 Alumina C House Baghouse Stack
			e-30 spent potliner storage building #30 vents
			e-31 kent mill baghouse stack
			e-35 dross storage building #35 fugitive dust
			E-78 Incline to East-West Belts Transfer Point Baghouse Stack
			E-79 Anode Bridge Conveyor Debris Collection Hopper
			E-80 Alumina Ore Handling Fugitive Dust
			E-81 Bath Raw Material Handling Fugitive Dust
			E-82 Coke And Pitch Railcar Unloading Fugitive Dust

J) Numbering Sequence of Emission Units (Continued):

PROCESS	EMISSION UNITS INCLUDED IN THE PERMIT (SUBJECT TO SPECIFIC REQUIREMENTS IN ADDITION TO GENERALLY APPLICABLE REQUIREMENTS)	EMISSION UNITS SUBJECT TO ONLY GENERALLY APPLICABLE REQUIREMENTS	IEUs
Ancillary Operations, Process #7			E-83 Chlorine Gas Storage Area Fugitive Emissions
			E-84 Chemical/Physical Laboratory Operations And Equipment
			E-85 Baghouse Hopper Unloading
			E-88 Boilerhouse Building #66 Central Steam Vent
			E-89 Aboveground Oil Storage Tank Vents
			E-90 Aboveground Diesel Storage Tank Vents
			E-91 Aboveground Transformer Oil Storage Tank Vents
			E-92 Aboveground Propane Storage Tanks
			E-93 Aboveground Gasoline Storage Tank Vents
			E-94 Potlining Superstructure Washdown Area Outside Building #32
			E-96 West Dock Fugitive Dust
			E-97 Scrap Brick Storage Pile Fugitive Dust
			E-98 Industrial Wastewater Lagoon
			E-99 Sewer Plant
			E-100gas Portable Supersucker
			E-101 Diesel Portable Supersuckers
			E-107 Alumina Ship Unloading Clamshell Fugitive Emissions
			E-109 Liquid Pitch Storage Tank Vents
Maintenance Activities, Process #8			E-102 Sand Blasting Stalls Near Building #45
			E-103 Cement Mixer And Gravel Piles Near Building #45
			E-104 Carpenter Shop Building #47 Cyclone Stack
			E-105 Paint Shop Building #45 Exhaust Fan
			E-106 Machine Shop Building #44 Welding Exhaust Stacks

Orders

Previous Orders

Vanalco's existing orders that contain applicable requirements are listed below:

Order DE 88-373 (1/6/89)
Order DE 89-I134 (8/30/89)
Order DE 91-I036 (4/4/91)
Order DE 92-AQI047 (4/17/92)
Order DE 92-AQI047 1st Amendment (4/23/92)
Order DE 92-AQI054 (6/1/92)
Order DE 92-AQI055 (6/12/92)
Order DE 92-AQI059 (5/4/92)
Order DE 93-AQI086 (10/28/93)
Order DE 96-AQI004 (3/15/96)
Order DE 96-AQI039 (7/2/96)
Order DE 96-AQI039 1st Amendment (no date shown on order)
Order DE 97-AQI015 (2/14/97)
Order DE 97-AQI016 (2/27/97)
Order DE 98-A-I065 (12/15/98)

Consolidated Order

Order No. DE 98–AQI043 amends the following orders:

Order DE 89-I134 (8/30/89)
Order DE 91AQI036 (4/4/91)
Order DE 92-AQI047 (4/17/92)
Order DE 92-AQI054 (6/1/92)
Order DE 92-AQI055 (6/12/92)
Order DE 92-AQI059 (5/4/92)
Order DE 93-AQI086 (10/2893)
Order DE 96-AQI004 (3/15/96)
Order DE 96-AQI039 (7/2/96)
Order DE 97-AQI015 (2/14/97)
Order DE 97-AQI016 (2/27/97)